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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,125	12/26/2001	Parviz Tayebati	CORE-19	3347

7590 10/17/2003

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EXAMINER

THOMAS, BRANDI N

ART UNIT PAPER NUMBER

2873

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/036,125

Applicant(s)

TAYEBATI, PARVIZ

Examiner

Brandi N Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *Detailed Action*.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Whitehead (5426312).

Regarding claim 2, a method for tuning an asymmetric Fabry-Perot modulator (2), comprising: reflecting light between a first reflector (6) and a second reflector (8) in said asymmetric Fabry-Perot modulator (2), said first reflector and said second reflector forming a resonating cavity (4) therebetween (col. 3, lines 33-37 and figure 1); and it is inherent that the resonant cavity would have a given length between the first reflector and the second reflector this being reasonably based on the actual value of the first reflector is determined by the components of the stack which includes the second reflector (col. 2, lines 43-46), except it does not specifically disclose using laser light, but it is inherent that laser light is used this being reasonably base upon Fabry-Perot modulators use lasers as a source of light; adjusting said first reflector to change said resonating cavity so as to produce an optimal wavelength as defined by the properties of electro-absorption material contained in said modulator (col. 5, lines 50-60 and figure 2); and monitoring the output of said first reflector as said resonating cavity is tuned to said another given length so as to tune said asymmetric Fabry-Perot modulator to the optimal wavelength (col. 2, lines 53-62).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitehead (5426312) in view of Liu et al. (5510914).

Regarding claim 1, Whitehead teaches an asymmetric Fabry-Perot modulator (2) comprising: a first reflector (6) and a second reflector (8) in said asymmetric Fabry-Perot Modulator forming resonant cavity (4) therebetween; electro-absorption material (10 and 16) disposed between said first reflector (6) and said second reflector (8), the absorption of said electro-absorption material being varied in response to an external modulating signal (12 and 14) (col. 2, lines 50-52 and figure 1); wherein the magnitude of light output from said first reflector is determined by the reflectivity of said first reflector, the reflectivity of said second reflector (col. 3, lines 33-37), the absorption in said electro-absorption material and the length of said resonant cavity (col. 3, lines 59-68 and col. 4, lines 1-11) except that it does not specifically show a means for adjusting the length of the resonant cavity, the first reflector being fixedly mounted and the second reflector being movably mounted. Liu et al. shows that it is known to provide a means for adjusting the cavity mechanically or by changing the refractive index (col. 1, lines 33-36) and the office interprets this to mean that one or both of the reflectors are movable and/or stationary this being reasonably based upon the reflectors define the cavity therefore by

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adjusting the cavity the reflectors can be adjustable or stationary. Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Whitehead with the adjusting means of Liu et al. for the purpose of tuning the cavity.

Regarding claim 3, a method for tuning an asymmetric Fabry-Perot modulator (2), comprising: reflecting light between a first reflector (6) and a second reflector (8) in said asymmetric Fabry-Perot modulator (2), said first reflector and said second reflector forming a resonating cavity (4) therebetween (col. 3, lines 33-37 and figure 1) except does not specifically disclose using laser light, but it is inherent that laser light is used this being reasonably base upon Fabry-Perot modulators use lasers as a source of light; applying an external modulating signal to electro-absorption material (10 and 16) disposed between said first reflector (6) and said second reflector (8), the absorption of said electro-absorption material being varied in response to an external modulating signal (12 and 14) (col. 2, lines 50-52 and figure 1); and adjusting said resonant cavity formed between said first reflector (6) and said second reflector (8) from said given length to said another given length, wherein the magnitude of light output from said first reflector is determined by the reflectivity of said first reflector, the reflectivity of said second reflector (col. 3, lines 33-37), the absorption in said electro-absorption material and the length of said resonant cavity (col. 3, lines 59-68 and col. 4, lines 1-11) except that it does not specifically show a means for adjusting the length of the resonant cavity between the first reflector and the second reflector. Liu et al. shows that it is known to provide a means for adjusting the cavity mechanically or by changing the refractive index (col. 1, lines 33-36) and it is obvious to one of ordinary skill in the art at the time the invention was made that the resonant cavity would have a given length between the first reflector and the second reflector this being

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reasonably based on the actual value of the first reflector is determined by the components of the stack which includes the second reflector (col. 2, lines 43-46), Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Whitehead with the adjusting means of Liu et al. for the purpose of tuning the cavity.

Regarding claim 4, Whitehead teaches the claimed invention as disclosed above in claim 3. Whitehead discloses a method of monitoring the magnitude of said light output from said first reflector (6) (wherein magnitude is spatial variation as discussed in col. 3, lines 61-68, col. 4, lines 1-11 and figure 1).

Regarding claim 5, Whitehead and Liu et al. teach the claimed invention as disclosed above in claim 4. Whitehead and Liu et al. disclose adjusting said resonant cavity (4) based upon said monitored light output to tune said asymmetric Fabry-Perot modulator (2) to an optimal wavelength (col. 5, lines 50-54) but does not specifically disclose adjusting the resonant cavity from said given length to said another length. . Liu et al. shows that it is known to provide a means for adjusting the cavity mechanically or by changing the refractive index (col. 1, lines 33-36) and the office interprets this to mean that one or both of the reflectors are movable and/or stationary this being reasonably based upon the reflectors define the cavity therefore by adjusting the cavity the reflectors can be adjustable or stationary.

Regarding claim 6, Whitehead teaches an asymmetric Fabry-Perot modulator (2) comprising: a first reflector (6) and a second reflector (8) in said asymmetric Fabry-Perot Modulator forming resonant cavity (4) therebetween; electro-absorption material (10 and 16) disposed between said first reflector (6) and said second reflector (8), the absorption of said electro-absorption material being varied in response to an external modulating signal (12 and 14)

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(col. 2, lines 50-52 and figure 1); wherein the magnitude of light output from said first reflector is determined by the reflectivity of said first reflector, the reflectivity of said second reflector (col. 3, lines 33-37), the absorption in said electro-absorption material and the length of said resonant cavity (col. 3, lines 59-68 and col. 4, lines 1-11) and it is inherent that another given length of the resonant cavity would be selectively adjustable between said first reflector and said second reflector this being reasonably based on the actual value of the first reflector is determined by the components of the stack which includes the second reflector (col. 2, lines 43-46); and applying an external modulating signal (12 and 14) to electro-absorption material (10 and 16) (col. 2, lines 50-52 and figure 1); monitoring the magnitude of said light output from said first reflector (6) (wherein magnitude is spatial variation discussed in col. 3, lines 61-68, col. 4, lines 1-11 and figure 1); and adjusting the length of said resonant cavity (4) based upon said monitored light output to tune said asymmetric Fabry-Perot modulator (2) to an optimal wavelength (col. 5, lines 50-54) except that it does not specifically show a means for adjusting the length of the resonant cavity and the second reflector movable mounted. Liu et al. shows that it is known to provide a means for adjusting the cavity mechanically or by changing the refractive index (col. 1, lines 33-36) and the office interprets this to mean that one or both of the reflectors are movable and/or stationary this being reasonably based upon the reflectors define the cavity therefore by adjusting the cavity the reflectors can be adjustable or stationary. Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Whitehead with the adjusting means of Liu et al. for the purpose of tuning the cavity.

Regarding claim 7, Whitehead teaches the claimed invention as disclosed above in claim 6. Whitehead discloses wherein the said external modulating signal is a voltage (col. 3, lines 46-48).

Regarding claim 8, Whitehead teaches the claimed invention as disclosed above in claim 7. Whitehead discloses wherein the said voltage is constant (wherein the voltage is fixed as discussed in col. 7, lines 25-26).

Regarding claim 9, Whitehead teaches the claimed invention as disclosed above in claim 7. Whitehead discloses wherein the said voltage is varied over time (col. 6, lines 11-19).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Coldren (6349106 B1) discloses a monolithic wavelength converter assembly that provides for the process of detection and regeneration at some other wavelength.

Seeser et al. (US 2002/0191268 A1) discloses a multi-cavity optical device allowing selective control of a bandpass characteristic.

Yoo (5495360) discloses an asymmetric Fabry-Perot modulator having an operating wavelength in the 1.5  $\mu\text{m}$  region used for long-haul optical transmission.

Lott (5892786) discloses an intracavity sensor based output power control for microcavity light emitting devices.

Whitehead (5202897) discloses an asymmetric Fabry modulator including a quantum well structure having wider than usual wells.



Trezza et al. (5909303) discloses a reversible and conservative photon routing switch is implemented as a room temperature, optical, vertical cavity X-gate.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

#### ***Response to Arguments***

7. Applicant's arguments filed 6/10/03 have been fully considered but they are not persuasive. Applicant's arguments disclose keeping the first reflector stationary and the second reflector movable however the prior art discloses adjusting the cavity length in which the first and second reflectors would be either movable and/or stationary since the reflectors enclose the cavity.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N Thomas whose telephone number is 703-308-3095.

The examiner can normally be reached on 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703-308-4883. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4883.



BNT



RICKY MACK  
PRIMARY EXAMINER